

SEX AND AGE DIFFERENCES IN THE INCIDENCE OF THYROID DISEASE IN CHILDREN WITH OBESITY

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Background: Obesity in adults is closely associated with an increased prevalence of thyroid gland (TG) pathology, but thyropathy formation issues among children are not sufficiently studied.

Objective and hypotheses: To determine the prevalence and structure of thyroid gland pathology in children with obesity by gender and degree of puberty.

Method: In 121 patients 6-16 years old with obesity a thyropathy detection was conducted (diffuse nontoxic goiter - DNG, autoimmune thyroiditis - AIT), based on a comprehensive study (ultrasound (US) study, determination of thyroid hormones level and thyroid antibody level in relation to TG tissue). Patients were grouped by gender (51 girl and 70 boys) and age according to the stage of puberty (1gr - pre-puberty, 2 gr - early puberty, 3 gr - puberty).

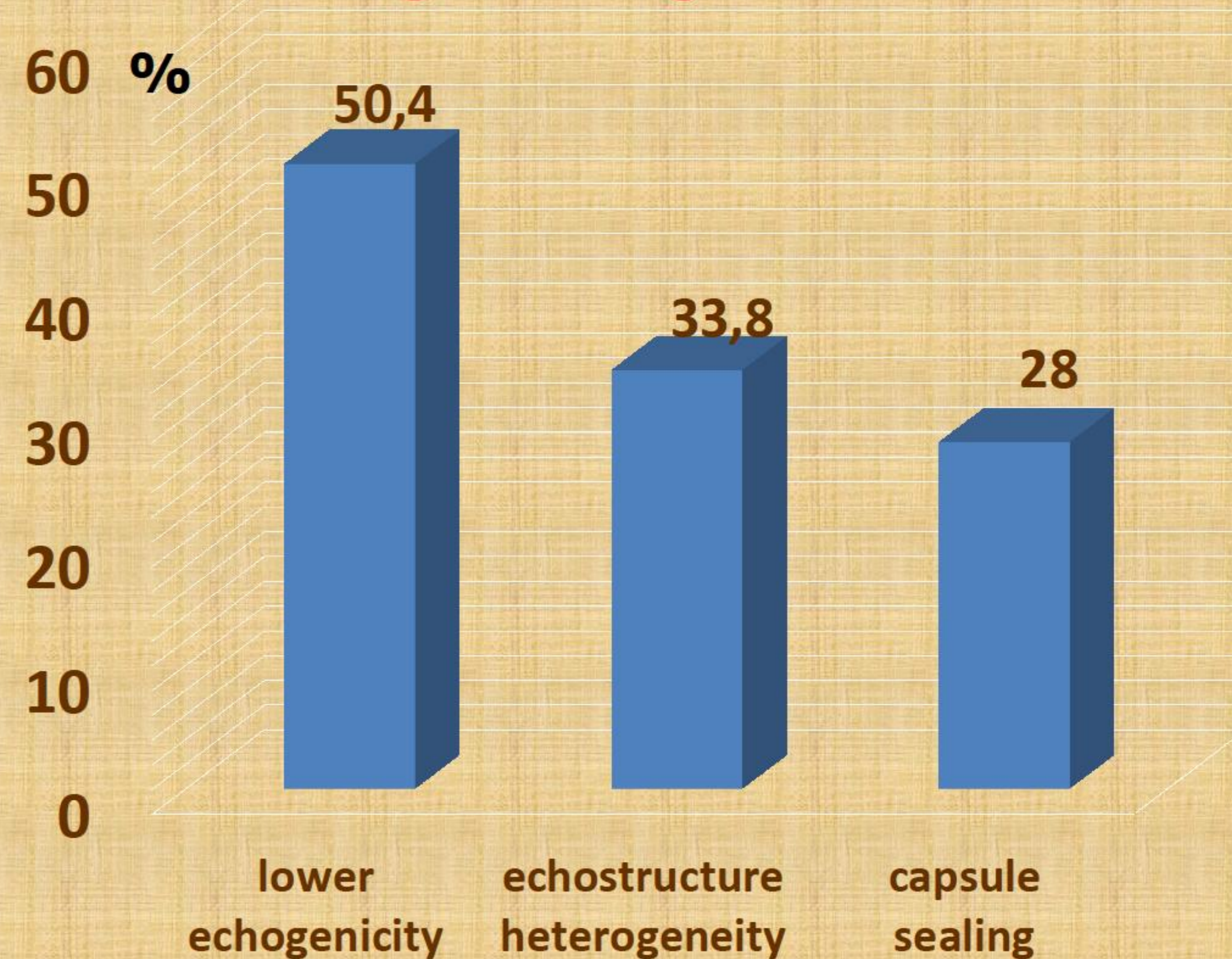
Results: Thyropathy most common in children with obesity, as well as in general children population is DNG (66.1%), prevalence of which is independent of gender. AIT was diagnosed in 8.3% of children with girls' percentage being more significant (13.7%) than that of boys (4.28%).

According to the US study results the following pathological changes in TG structure were discovered: lower echogenicity - in 50.4% echostructure heterogeneity - in 33.8%, capsule sealing - in 28.0%. These changes were found in children with increased TG volume, as well as in children with normal TG volume, absence of antithyroid antibodies and normal TSH levels - in 14.9%.

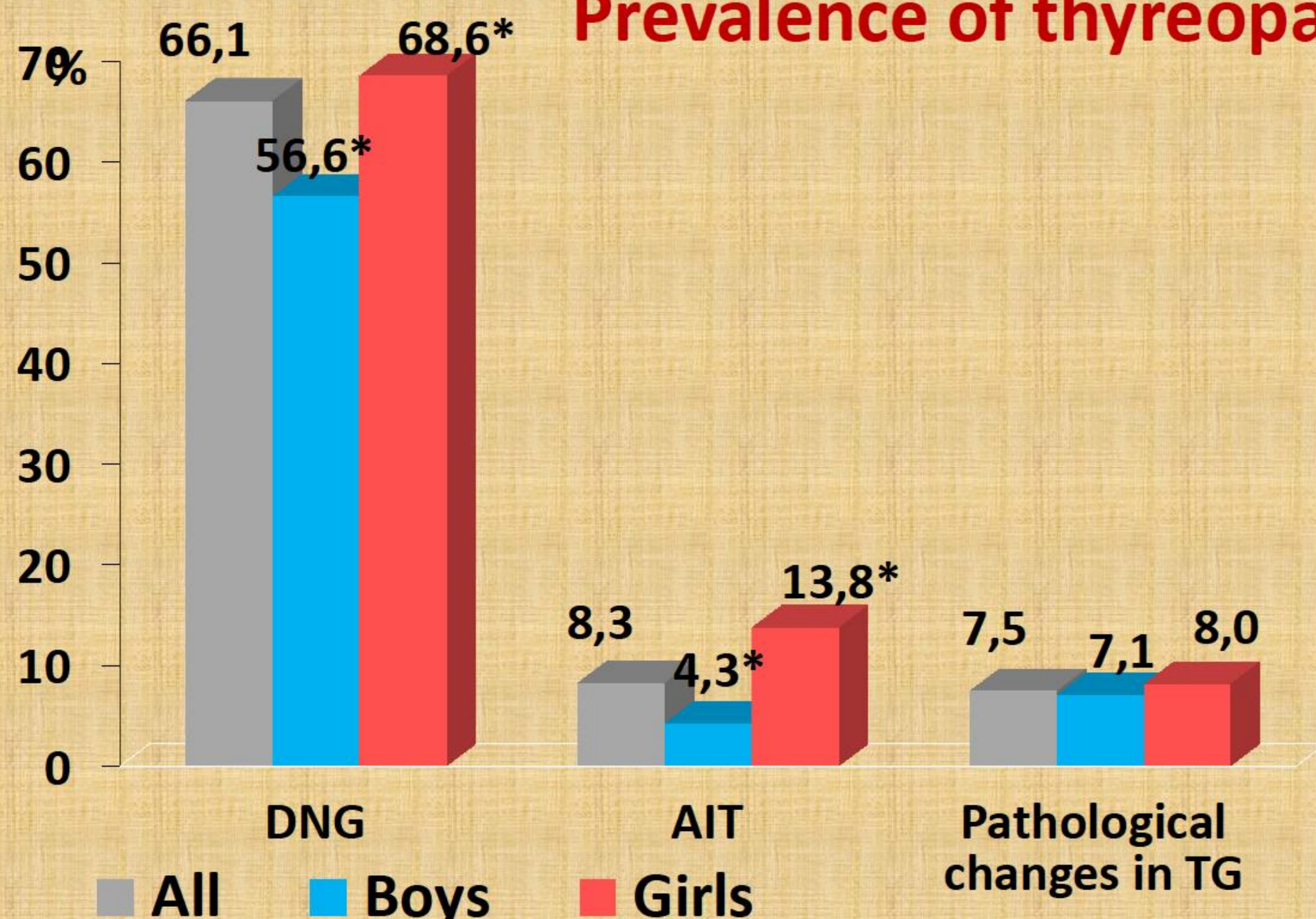
The DNG was the most common pathology in every age group, but it's prevalence was the most significant in early puberty group (72.1% in 2gr. against 65.2% in 1 gr and 56.1% in 3gr., $p < 0.05$).

AIT in children with obesity was only found in early pubertal age, with gradual increase in prevalence of this thyropathy during puberty (9.3% in 2 gr, 14.6% in 3 gr, $p < 0.05$) and girls' percentage being more significant than that of boys (13.6% and 4.7% respectively in 2gr, 21.4% and 3.7% in 3gr, $p < 0.05$).

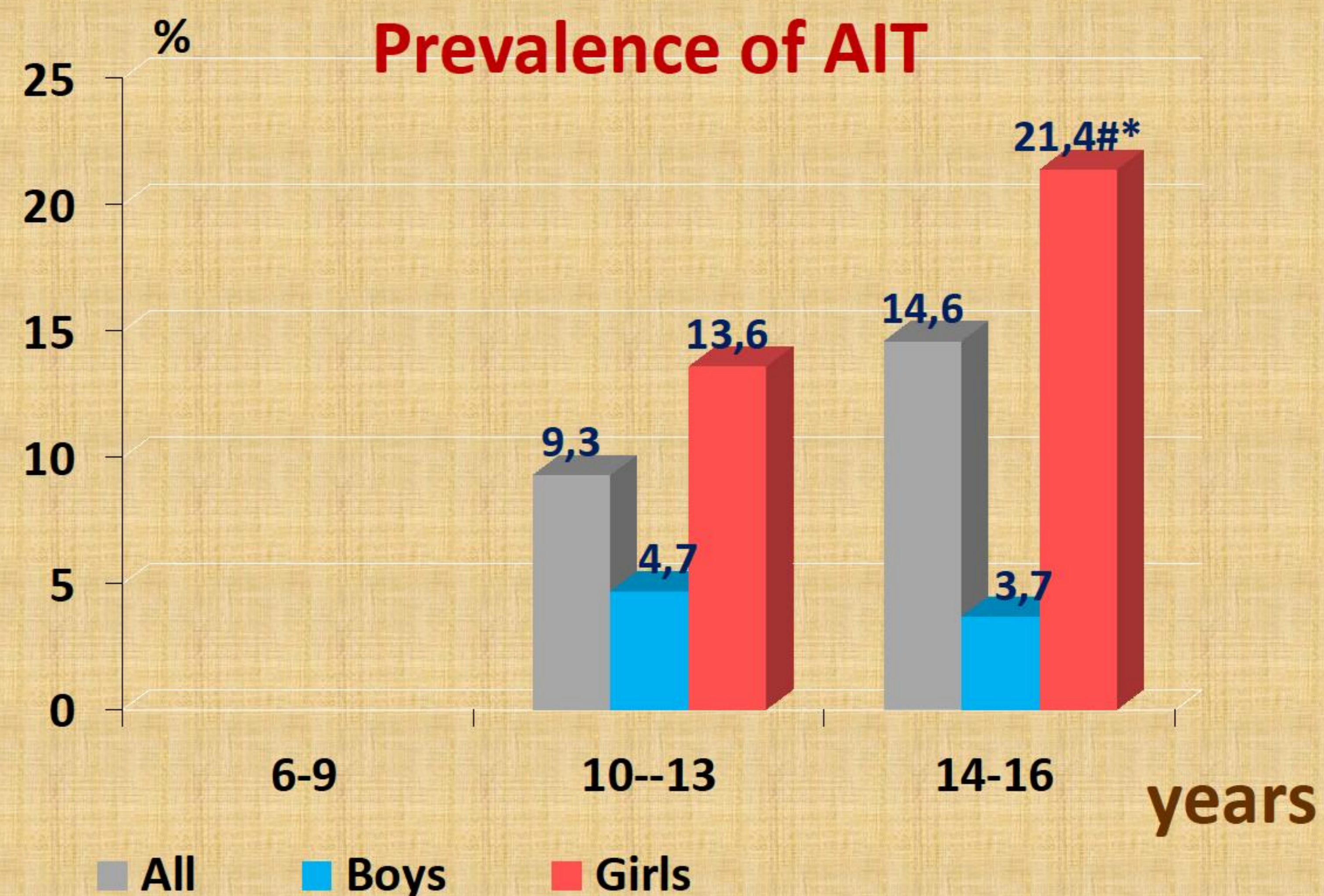
Pathological changes in TG structure



Prevalence of thyreopathy



Prevalence of AIT



Conclusion. In most children with obesity, even those in pre-pubertal age, thyroid pathology is present, and its prevalence depends on patients' sex and stage of puberty

